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## REMARKS

By this amendment, Claim 21 has been amended. Hence, Claims 1-67 are pending in this application. The amendment to Claim 21 does not add any new matter to this application. Applicant respectfully submits that the amendment to Claim 21 places 5 Claim 21 in better form for consideration on appeal and the entering of the amendment is therefore respectfully requested.

If there are any additional charges, please charge them to Deposit Account No. 50-1302.

Respectfully submitted,  
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on September 10, 2001

by



Sheila Severinghaus

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## MARKED UP VERSIONS OF CLAIMS

- 1 1. (NOT AMENDED) A method for automatically routing an integrated circuit, the  
2 method comprising the computer-implemented steps of:  
3 receiving integrated circuit layout data that defines a set of two or more integrated  
4 circuit devices to be included in the integrated circuit;  
5 receiving integrated circuit connection data that specifies one or more electrical  
6 connections to be made between the integrated circuit devices;  
7 determining, based upon the integrated circuit layout data and the integrated  
8 circuit connection data, a set of one or more routing indicators that specify  
9 a set of one or more preferable intermediate routing locations through  
10 which a routing path is to be located to connect first and second integrated  
11 circuit devices from the set of two or more integrated circuit devices;  
12 determining, based upon the integrated circuit layout data, the integrated circuit  
13 connection data and the set of one or more routing indicators, the routing  
14 path between the first and second integrated circuit devices, wherein the  
15 routing path satisfies specified design criteria; and  
16 updating the integrated circuit layout data to generate updated integrated circuit  
17 layout data that reflects the routing path between the first and second  
18 integrated circuit devices.

- 1 2. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path includes determining, based upon the integrated circuit layout data,  
3 the integrated circuit connection data, bias direction criteria and straying limit  
4 criteria, the routing path between the first and second integrated circuit devices,  
5 wherein the bias direction criteria specifies a preferred routing direction for a

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6 routing path between first and second integrated circuit devices from the set of  
7 two or more integrated circuit devices and the straying limit criteria defines a  
8 routing region in which the routing path between the first and second integrated  
9 circuit devices may be placed.

1 3. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path,  
4 determining, based upon the integrated circuit layout data, the integrated circuit  
5 connection data and the one or more obstacles, one or more additional  
6 routing indicators that specify one or more preferable routing locations  
7 through which the routing path is to be located to avoid the one or more  
8 obstacles, and  
9 determining, based upon the integrated circuit layout data, the integrated circuit  
10 connection data, the set of one or more routing indicators and the one or  
11 more additional routing indicators, the routing path between the first and  
12 second integrated circuit devices.

1 4. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path,  
4 changing specified straying limit criteria that defines a routing region in which the  
5 routing path between the first and second integrated circuit devices may be  
6 placed to generate changed specified straying limit criteria that defines a  
7 modified routing region, and  
8 determining, based upon the integrated circuit layout data, the integrated circuit  
9 connection data, the set of one or more routing indicators and the changed

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10 specified straying limit criteria, the routing path between the first and  
11 second integrated circuit devices.

1 5. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path,  
4 determining a set of one or more layer changes to allow the routing path to avoid  
5 the one or more obstacles, and  
6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators and the set of  
8 one or more layer changes, the routing path between the first and second  
9 integrated circuit devices.

1 6. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path,  
4 determining a set of one or more bends to be included in the routing path to avoid  
5 the one or more obstacles, and  
6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators and the set of  
8 one or more bends, the routing path between the first and second  
9 integrated circuit devices.

1 7. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path,

4 determining one or more portions of the routing path to be ripped up and rerouted,

5 and

6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators and the one or  
8 more portions of the routing path to be ripped up and rerouted, the routing  
9 path between the first and second integrated circuit devices.

1 8. (NOT AMENDED) The method as recited in Claim 7, wherein determining the  
2 routing path between the first and second integrated circuit devices further  
3 includes

4 determining one or more portions of one or more other routing paths to be ripped  
5 up and rerouted, and

6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators, the one or more  
8 portions of the routing path to be ripped up and rerouted and the one or  
9 more portions of the one or more other routing paths to be ripped up and  
10 rerouted, the routing path between the first and second integrated circuit  
11 devices.

1 9. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices further  
3 includes

4 identifying one or more obstacles that block the routing path,

5 determining one or more portions of one or more other routing paths to be ripped  
6 up and rerouted, and

7 determining, based upon the integrated circuit layout data, the integrated circuit  
8 connection data, the set of one or more routing indicators and the one or

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9 more portions of the one or more other routing paths to be ripped up and  
10 rerouted, the routing path between the first and second integrated circuit  
11 devices.

1 10. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path, and  
4 determining, based upon the integrated circuit layout data, the integrated circuit  
5 connection data and the set of one or more routing indicators, the routing  
6 path between the first and second integrated circuit devices, wherein the  
7 routing path is routed from the second integrated circuit device to the first  
8 integrated circuit device.

1 11. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path,  
4 determining one or more locations to employ corner clipping to provide additional  
5 space for the routing path, and  
6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators and the one or  
8 more locations to employ corner clipping, the routing path between the  
9 first and second integrated circuit devices.

1 12. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path,

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4 determining one or more integrated circuit layout objects to be moved to provide  
5 additional space for the routing path, and  
6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators and moving the  
8 one or more integrated circuit layout objects, the routing path between the  
9 first and second integrated circuit devices.

1 13. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 examining data that indicates whether changes can be made to one or more layout  
4 objects defined by the integrated circuit layout data to accommodate the  
5 routing of the routing path, and  
6 if the data indicates that changes can be made to the one or more layout objects  
7 defined by the integrated circuit layout data to accommodate the routing of  
8 the routing path, then  
9 making one or more changes to the one or more layout objects defined by  
10 the integrated circuit layout data, and  
11 determining, based upon the integrated circuit layout data, the integrated  
12 circuit connection data, the set of one or more routing indicators  
13 and the one or more changes made to the one or more layout  
14 objects, the routing path between the first and second integrated  
15 circuit devices.

1 14. (NOT AMENDED) The method as recited in Claim 13, further comprising  
2 generating data that specifies the one or more changes made to the one or more  
3 layout objects.

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1 15. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 determining a set of one or more routing targets to which the routing path is to be  
4 routed, and

5 determining, based upon the integrated circuit layout data, the integrated circuit  
6 connection data, the set of one or more routing indicators and the set of  
7 one or more routing targets, the routing path between the first and second  
8 integrated circuit devices.

1 16. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 performing one or more design rule checks on one or more portions of the routing  
4 path as the routing path is being determined.

1 17. (NOT AMENDED) The method as recited in Claim 16, further comprising  
2 performing a design rule check on the updated integrated circuit layout data,  
3 wherein the design rule check does not check one or more layout objects  
4 previously checked during determination of the routing path.

1 18. (NOT AMENDED) The method as recited in Claim 1, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 extending the routing path a specified amount to generate an extended portion of  
4 the routing path, and  
5 selectively performing a design rule check on only the extended portion of the  
6 routing path.

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1 19. (NOT AMENDED) The method as recited in Claim 1, wherein all attachment and  
2 bend angles defined by the updated integrated circuit layout data are multiples of  
3 ninety degrees.

1 20. (NOT AMENDED) The method as recited in Claim 1, wherein one or more  
2 attachment or bend angles defined by the updated integrated circuit layout data  
3 are multiples of other than ninety degrees.

1 21. (ONCE AMENDED) A method for automatically verifying an integrated circuit  
2 layout, the method comprising the computer-implemented steps of:  
3 receiving integrated circuit layout data that defines a set of two or more layout  
4 objects contained in the integrated circuit layout;  
5 performing a first design rule check on a layout object from the set of two or more  
6 layout objects by evaluating the layout object against specified design  
7 criteria;  
8 changing one or more values defined by the specified design criteria to generate  
9 updated specified design criteria, wherein the changing of the one or more  
10 values is performed after a specified amount of time has elapsed and is  
11 made with respect to [either] only the layout object; [object or one or more  
12 other layout objects from the set of two or more layout objects;] and  
13 performing a second design rule check on the layout object by evaluating the  
14 layout object against the updated specified design criteria.

1 22. (NOT AMENDED) A method for automatically routing an integrated circuit, the  
2 method comprising the computer-implemented steps of:  
3 receiving integrated circuit layout data that defines a set of two or more integrated  
4 circuit devices to be included in the integrated circuit;

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5 receiving integrated circuit connection data that specifies one or more electrical  
6 connections to be made between the integrated circuit devices;  
7 determining, based upon the integrated circuit layout data and the integrated  
8 circuit connection data, a set of two or more join points that are to be  
9 electrically connected, wherein each join point from the set of two or more  
10 join points has an associated set of specified design criteria that control  
11 attachment of routing paths thereto;  
12 determining, based upon the integrated circuit layout data and the set of two or  
13 more join points, one or more routing paths to connect the set of two or  
14 more join points, wherein the one or more routing paths satisfy the  
15 specified design criteria associated with the set of two or more join points;  
16 and  
17 updating the integrated circuit layout data to generate updated integrated circuit  
18 layout data that reflects the one or more routing paths.

1 23. (NOT AMENDED) A method for automatically routing an integrated circuit, the  
2 method comprising the computer-implemented steps of:  
3 receiving integrated circuit layout data that defines a set of two or more integrated  
4 circuit devices to be included in the integrated circuit;  
5 receiving integrated circuit connection data that specifies one or more electrical  
6 connections to be made between the integrated circuit devices;  
7 determining, based upon the integrated circuit layout data and the integrated  
8 circuit connection data, a routing path between first and second integrated  
9 circuit devices that satisfies specified design criteria, wherein determining  
10 the routing path between the first and second integrated circuit devices  
11 includes

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12           determining whether the distance to be routed for a portion of the routing  
13           path exceeds a specified distance, and  
14           if the distance to be routed for the portion of the routing path does not  
15           exceed the specified distance, then routing the portion of the  
16           routing path in a single step; and  
17           updating the integrated circuit layout data to generate updated integrated circuit  
18           layout data that reflects the routing path between the first and second  
19           integrated circuit devices.

1    24. (NOT AMENDED) A computer-readable medium carrying one or more sequences  
2    of one or more instructions for automatically routing an integrated circuit, the one or  
3    more sequences of one or more instructions including instructions which, when  
4    executed by one or more processors, cause the one or more processors to perform  
5    the steps of:  
6      receiving integrated circuit layout data that defines a set of two or more  
7      integrated circuit devices to be included in the integrated circuit;  
8      receiving integrated circuit connection data that specifies one or more electrical  
9      connections to be made between the integrated circuit devices;  
10     determining, based upon the integrated circuit layout data and the integrated  
11     circuit connection data, a set of one or more routing indicators that specify  
12     a set of one or more preferable intermediate routing locations through  
13     which a routing path is to be located to connect first and second integrated  
14     circuit devices from the set of two or more integrated circuit devices;  
15     determining, based upon the integrated circuit layout data, the integrated circuit  
16     connection data and the set of one or more routing indicators, the routing  
17     path between the first and second integrated circuit devices, wherein the  
18     routing path satisfies specified design criteria; and

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19 updating the integrated circuit layout data to generate updated integrated circuit  
20 layout data that reflects the routing path between the first and second  
21 integrated circuit devices.

1 25. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path includes determining, based upon the  
3 integrated circuit layout data, the integrated circuit connection data, bias direction  
4 criteria and straying limit criteria, the routing path between the first and second  
5 integrated circuit devices, wherein the bias direction criteria specifies a preferred  
6 routing direction for a routing path between first and second integrated circuit  
7 devices from the set of two or more integrated circuit devices and the straying  
8 limit criteria defines a routing region in which the routing path between the first  
9 and second integrated circuit devices may be placed.

1 26. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices includes  
4 identifying one or more obstacles that block the routing path,  
5 determining, based upon the integrated circuit layout data, the integrated circuit  
6 connection data and the one or more obstacles, one or more additional  
7 routing indicators that specify one or more preferable routing locations  
8 through which the routing path is to be located to avoid the one or more  
9 obstacles, and  
10 determining, based upon the integrated circuit layout data, the integrated circuit  
11 connection data, the set of one or more routing indicators and the one or  
12 more additional routing indicators, the routing path between the first and  
13 second integrated circuit devices.

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- 1 27. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices includes  
4 identifying one or more obstacles that block the routing path,  
5 changing specified straying limit criteria that defines a routing region in which the  
6 routing path between the first and second integrated circuit devices may be  
7 placed to generate changed specified straying limit criteria that defines a  
8 modified routing region, and  
9 determining, based upon the integrated circuit layout data, the integrated circuit  
10 connection data, the set of one or more routing indicators and the changed  
11 specified straying limit criteria, the routing path between the first and  
12 second integrated circuit devices.
  
- 1 28. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices includes  
4 identifying one or more obstacles that block the routing path,  
5 determining a set of one or more layer changes to allow the routing path to avoid  
6 the one more obstacles, and  
7 determining, based upon the integrated circuit layout data, the integrated circuit  
8 connection data, the set of one or more routing indicators and the set of  
9 one or more layer changes, the routing path between the first and second  
10 integrated circuit devices.
  
- 1 29. (NOT AMENDED) A system for automatically routing an integrated circuit, the  
2 system comprising:

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3        a data storage mechanism having stored therein  
4        integrated circuit layout data that defines a set of two or more integrated  
5        circuit devices to be included in the integrated circuit, and  
6        integrated circuit connection data that specifies one or more electrical  
7        connections to be made between the integrated circuit devices; and  
8        a routing mechanism communicatively coupled to the data storage mechanism,  
9        the routing mechanism being configured to  
10      determine, based upon the integrated circuit layout data and the integrated  
11      circuit connection data, a set of one or more routing indicators that  
12      specify a set of one or more preferable intermediate routing  
13      locations through which a routing path is to be located to connect  
14      first and second integrated circuit devices from the set of two or  
15      more integrated circuit devices,  
16      determine, based upon the integrated circuit layout data, the integrated  
17      circuit connection data and the set of one or more routing  
18      indicators, the routing path between the first and second integrated  
19      circuit devices, wherein the routing path satisfies specified design  
20      criteria, and  
21      update the integrated circuit layout data to generate updated integrated  
22      circuit layout data that reflects the routing path between the first  
23      and second integrated circuit devices.

1        30. (NOT AMENDED) The system as recited in Claim 29, wherein the routing  
2        mechanism is further configured to determine the routing path by determining,  
3        based upon the integrated circuit layout data, the integrated circuit connection  
4        data, bias direction criteria and straying limit criteria, the routing path between the  
5        first and second integrated circuit devices, wherein the bias direction criteria

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6 specifies a preferred routing direction for a routing path between first and second  
7 integrated circuit devices from the set of two or more integrated circuit devices  
8 and the straying limit criteria defines a routing region in which the routing path  
9 between the first and second integrated circuit devices may be placed.

1 31. (NOT AMENDED) The system as recited in Claim 29, wherein the routing  
2 mechanism is further configured to determine the routing path between the first  
3 and second integrated circuit devices by  
4 identifying one or more obstacles that block the routing path,  
5 determining, based upon the integrated circuit layout data, the integrated circuit  
6 connection data and the one or more obstacles, one or more additional  
7 routing indicators that specify one or more preferable routing locations  
8 through which the routing path is to be located to avoid the one or more  
9 obstacles, and  
10 determining, based upon the integrated circuit layout data, the integrated circuit  
11 connection data, the set of one or more routing indicators and the one or  
12 more additional routing indicators, the routing path between the first and  
13 second integrated circuit devices.

1 32. (NOT AMENDED) The system as recited in Claim 29, wherein the routing  
2 mechanism is further configured to determine the routing path between the first  
3 and second integrated circuit devices by  
4 identifying one or more obstacles that block the routing path,  
5 changing specified straying limit criteria that defines a routing region in which the  
6 routing path between the first and second integrated circuit devices may be  
7 placed to generate changed specified straying limit criteria that defines a  
8 modified routing region, and

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9           determining, based upon the integrated circuit layout data, the integrated circuit  
10           connection data, the set of one or more routing indicators and the changed  
11           specified straying limit criteria, the routing path between the first and  
12           second integrated circuit devices.

1    33. (NOT AMENDED) The system as recited in Claim 29, wherein routing  
2           mechanism is further configured to determine the routing path between the first  
3           and second integrated circuit devices by  
4           identifying one or more obstacles that block the routing path,  
5           determining a set of one or more layer changes to allow the routing path to avoid  
6           the one more obstacles, and  
7           determining, based upon the integrated circuit layout data, the integrated circuit  
8           connection data, the set of one or more routing indicators and the set of  
9           one or more layer changes, the routing path between the first and second  
10           integrated circuit devices.

1    34. (NOT AMENDED) The method as recited in Claim 1, wherein each routing  
2           indicator from the set of one or more routing indicators further specifies a routing  
3           direction for the routing path.

1    35. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2           wherein determining the routing path between the first and second integrated  
3           circuit devices includes  
4           identifying one or more obstacles that block the routing path,  
5           determining a set of one or more bends to be included in the routing path to avoid  
6           the one more obstacles, and

7 determining, based upon the integrated circuit layout data, the integrated circuit  
8 connection data, the set of one or more routing indicators and the set of  
9 one or more bends, the routing path between the first and second  
10 integrated circuit devices.

1 36. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices includes  
4 identifying one or more obstacles that block the routing path,  
5 determining one or more portions of the routing path to be ripped up and rerouted,  
6 and  
7 determining, based upon the integrated circuit layout data, the integrated circuit  
8 connection data, the set of one or more routing indicators and the one or  
9 more portions of the routing path to be ripped up and rerouted, the routing  
10 path between the first and second integrated circuit devices.

1 37. (NOT AMENDED) The computer-readable medium as recited in Claim 36,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices further includes  
4 determining one or more portions of one or more other routing paths to be ripped  
5 up and rerouted, and  
6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators, the one or more  
8 portions of the routing path to be ripped up and rerouted and the one or  
9 more portions of the one or more other routing paths to be ripped up and  
10 rerouted, the routing path between the first and second integrated circuit  
11 devices.

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- 1 38. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices further includes  
4 identifying one or more obstacles that block the routing path,  
5 determining one or more portions of one or more other routing paths to be ripped  
6 up and rerouted, and  
7 determining, based upon the integrated circuit layout data, the integrated circuit  
8 connection data, the set of one or more routing indicators and the one or  
9 more portions of the one or more other routing paths to be ripped up and  
10 rerouted, the routing path between the first and second integrated circuit  
11 devices.
  
- 1 39. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices includes  
4 identifying one or more obstacles that block the routing path, and  
5 determining, based upon the integrated circuit layout data, the integrated circuit  
6 connection data and the set of one or more routing indicators, the routing  
7 path between the first and second integrated circuit devices, wherein the  
8 routing path is routed from the second integrated circuit device to the first  
9 integrated circuit device.
  
- 1 40. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices includes  
4 identifying one or more obstacles that block the routing path,

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5       determining one or more locations to employ corner clipping to provide additional  
6       space for the routing path, and  
7       determining, based upon the integrated circuit layout data, the integrated circuit  
8       connection data, the set of one or more routing indicators and the one or  
9       more locations to employ corner clipping, the routing path between the  
10      first and second integrated circuit devices.

1    41. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2       wherein determining the routing path between the first and second integrated  
3       circuit devices includes  
4       identifying one or more obstacles that block the routing path,  
5       determining one or more integrated circuit layout objects to be moved to provide  
6       additional space for the routing path, and  
7       determining, based upon the integrated circuit layout data, the integrated circuit  
8       connection data, the set of one or more routing indicators and moving the  
9       one or more integrated circuit layout objects, the routing path between the  
10      first and second integrated circuit devices.

1    42. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2       wherein determining the routing path between the first and second integrated  
3       circuit devices includes  
4       examining data that indicates whether changes can be made to one or more layout  
5       objects defined by the integrated circuit layout data to accommodate the  
6       routing of the routing path, and  
7       if the data indicates that changes can be made to the one or more layout objects  
8       defined by the integrated circuit layout data to accommodate the routing of  
9       the routing path, then

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10 making one or more changes to the one or more layout objects defined by  
11 the integrated circuit layout data, and  
12 determining, based upon the integrated circuit layout data, the integrated  
13 circuit connection data, the set of one or more routing indicators  
14 and the one or more changes made to the one or more layout  
15 objects, the routing path between the first and second integrated  
16 circuit devices.

1 43. (NOT AMENDED) The computer-readable medium as recited in Claim 42,  
2 further comprising one or more additional instructions which, when executed by  
3 the one or more processors, cause the one or more processors to generate data that  
4 specifies the one or more changes made to the one or more layout objects.

1 44. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices includes  
4 determining a set of one or more routing targets to which the routing path is to be  
5 routed, and  
6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators and the set of  
8 one or more routing targets, the routing path between the first and second  
9 integrated circuit devices.

1 45. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices includes performing one or more design rule checks on one or  
4 more portions of the routing path as the routing path is being determined.

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- 1 46. (NOT AMENDED) The computer-readable medium as recited in Claim 45,  
2 further comprising one or more additional instructions which, when executed by  
3 the one or more processors, cause the one or more processors to perform a design  
4 rule check on the updated integrated circuit layout data, wherein the design rule  
5 check does not check one or more layout objects previously checked during  
6 determination of the routing path.
  
- 1 47. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein determining the routing path between the first and second integrated  
3 circuit devices includes  
4 extending the routing path a specified amount to generate an extended portion of  
5 the routing path, and  
6 selectively performing a design rule check on only the extended portion of the  
7 routing path.
  
- 1 48. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein all attachment and bend angles defined by the updated integrated circuit  
3 layout data are multiples of ninety degrees.
  
- 1 49. (NOT AMENDED) The computer-readable medium as recited in Claim 24,  
2 wherein one or more attachment or bend angles defined by the updated integrated  
3 circuit layout data are multiples of other than ninety degrees.
  
- 1 50. (NOT AMENDED) A computer-readable medium carrying one or more  
2 sequences of one or more instructions for automatically verifying an integrated  
3 circuit layout, the one or more sequences of one or more instructions including

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4       instructions which, when executed by one or more processors, cause the one or  
5       more processors to perform the steps of:  
6            receiving integrated circuit layout data that defines a set of two or more layout  
7            objects contained in the integrated circuit layout;  
8            performing a first design rule check on a layout object from the set of two or more  
9            layout objects by evaluating the layout object against specified design  
10            criteria;  
11            changing one or more values defined by the specified design criteria to generate  
12            updated specified design criteria, wherein the changing of the one or more  
13            values is performed after a specified amount of time has elapsed and is  
14            made with respect to either the layout object or one or more other layout  
15            objects from the set of two or more layout objects; and  
16            performing a second design rule check on the layout object by evaluating the  
17            layout object against the updated specified design criteria.

1       51. (NOT AMENDED) A computer-readable medium carrying one or more sequences  
2        of one or more instructions for automatically routing an integrated circuit, the one or  
3        more sequences of one or more instructions including instructions which, when  
4        executed by one or more processors, cause the one or more processors to perform  
5        the steps of:  
6            receiving integrated circuit layout data that defines a set of two or more integrated  
7            circuit devices to be included in the integrated circuit;  
8            receiving integrated circuit connection data that specifies one or more electrical  
9            connections to be made between the integrated circuit devices;  
10           determining, based upon the integrated circuit layout data and the integrated  
11           circuit connection data, a set of two or more join points that are to be  
12           electrically connected, wherein each join point from the set of two or more

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13 join points has an associated set of specified design criteria that control  
14 attachment of routing paths thereto;  
15 determining, based upon the integrated circuit layout data and the set of two or  
16 more join points, one or more routing paths to connect the set of two or  
17 more join points, wherein the one or more routing paths satisfy the  
18 specified design criteria associated with the set of two or more join points;  
19 and  
20 updating the integrated circuit layout data to generate updated integrated circuit  
21 layout data that reflects the one or more routing paths.

1 52. (NOT AMENDED) A computer-readable medium carrying one or more sequences  
2 of one or more instructions for automatically routing an integrated circuit, the one or  
3 more sequences of one or more instructions including instructions which, when  
4 executed by one or more processors, cause the one or more processors to perform  
5 the steps of:  
6 receiving integrated circuit layout data that defines a set of two or more integrated  
7 circuit devices to be included in the integrated circuit;  
8 receiving integrated circuit connection data that specifies one or more electrical  
9 connections to be made between the integrated circuit devices;  
10 determining, based upon the integrated circuit layout data and the integrated  
11 circuit connection data, a routing path between first and second integrated  
12 circuit devices that satisfies specified design criteria, wherein determining  
13 the routing path between the first and second integrated circuit devices  
14 includes  
15 determining whether the distance to be routed for a portion of the routing  
16 path exceeds a specified distance, and

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17                   if the distance to be routed for the portion of the routing path does not  
18                    exceed the specified distance, then routing the portion of the  
19                    routing path in a single step; and  
20                    updating the integrated circuit layout data to generate updated integrated circuit  
21                    layout data that reflects the routing path between the first and second  
22                    integrated circuit devices.

1    53. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2                    routing path between the first and second integrated circuit devices includes  
3                    identifying one or more obstacles that block the routing path,  
4                    determining a set of one or more bends to be included in the routing path to avoid  
5                    the one or more obstacles, and  
6                    determining, based upon the integrated circuit layout data, the integrated circuit  
7                    connection data, the set of one or more routing indicators and the set of  
8                    one or more bends, the routing path between the first and second  
9                    integrated circuit devices.

1    54. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2                    routing path between the first and second integrated circuit devices includes  
3                    identifying one or more obstacles that block the routing path,  
4                    determining one or more portions of the routing path to be ripped up and rerouted,  
5                    and  
6                    determining, based upon the integrated circuit layout data, the integrated circuit  
7                    connection data, the set of one or more routing indicators and the one or  
8                    more portions of the routing path to be ripped up and rerouted, the routing  
9                    path between the first and second integrated circuit devices.

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1 55. (NOT AMENDED) The system as recited in Claim 54, wherein determining the  
2 routing path between the first and second integrated circuit devices further  
3 includes

4 determining one or more portions of one or more other routing paths to be ripped  
5 up and rerouted, and  
6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators, the one or more  
8 portions of the routing path to be ripped up and rerouted and the one or  
9 more portions of the one or more other routing paths to be ripped up and  
10 rerouted, the routing path between the first and second integrated circuit  
11 devices.

1 56. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2 routing path between the first and second integrated circuit devices further  
3 includes

4 identifying one or more obstacles that block the routing path,  
5 determining one or more portions of one or more other routing paths to be ripped  
6 up and rerouted, and  
7 determining, based upon the integrated circuit layout data, the integrated circuit  
8 connection data, the set of one or more routing indicators and the one or  
9 more portions of the one or more other routing paths to be ripped up and  
10 rerouted, the routing path between the first and second integrated circuit  
11 devices.

1 57. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path, and

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4 determining, based upon the integrated circuit layout data, the integrated circuit  
5 connection data and the set of one or more routing indicators, the routing  
6 path between the first and second integrated circuit devices, wherein the  
7 routing path is routed from the second integrated circuit device to the first  
8 integrated circuit device.

1 58. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path,  
4 determining one or more locations to employ corner clipping to provide additional  
5 space for the routing path, and  
6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators and the one or  
8 more locations to employ corner clipping, the routing path between the  
9 first and second integrated circuit devices.

1 59. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 identifying one or more obstacles that block the routing path,  
4 determining one or more integrated circuit layout objects to be moved to provide  
5 additional space for the routing path, and  
6 determining, based upon the integrated circuit layout data, the integrated circuit  
7 connection data, the set of one or more routing indicators and moving the  
8 one or more integrated circuit layout objects, the routing path between the  
9 first and second integrated circuit devices.

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1 60. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 examining data that indicates whether changes can be made to one or more layout  
4 objects defined by the integrated circuit layout data to accommodate the  
5 routing of the routing path, and  
6 if the data indicates that changes can be made to the one or more layout objects  
7 defined by the integrated circuit layout data to accommodate the routing of  
8 the routing path, then  
9 making one or more changes to the one or more layout objects defined by  
10 the integrated circuit layout data, and  
11 determining, based upon the integrated circuit layout data, the integrated  
12 circuit connection data, the set of one or more routing indicators  
13 and the one or more changes made to the one or more layout  
14 objects, the routing path between the first and second integrated  
15 circuit devices.

1 61. (NOT AMENDED) The system as recited in Claim 60, wherein the routing  
2 mechanism is further configured to generate data that specifies the one or more  
3 changes made to the one or more layout objects.

1 62. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2 routing path between the first and second integrated circuit devices includes  
3 determining a set of one or more routing targets to which the routing path is to be  
4 routed, and  
5 determining, based upon the integrated circuit layout data, the integrated circuit  
6 connection data, the set of one or more routing indicators and the set of

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7                   one or more routing targets, the routing path between the first and second  
8                   integrated circuit devices.

1   63. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2                   routing path between the first and second integrated circuit devices includes  
3                   performing one or more design rule checks on one or more portions of the routing  
4                   path as the routing path is being determined.

1   64. (NOT AMENDED) The system as recited in Claim 63, wherein the routing  
2                   mechanism is further configured to perform a design rule check on the updated  
3                   integrated circuit layout data, wherein the design rule check does not check one or  
4                   more layout objects previously checked during determination of the routing path.

1   65. (NOT AMENDED) The system as recited in Claim 29, wherein determining the  
2                   routing path between the first and second integrated circuit devices includes  
3                   extending the routing path a specified amount to generate an extended portion of  
4                   the routing path, and  
5                   selectively performing a design rule check on only the extended portion of the  
6                   routing path.

1   66. (NOT AMENDED) The system as recited in Claim 29, wherein all attachment  
2                   and bend angles defined by the updated integrated circuit layout data are multiples  
3                   of ninety degrees.

1   67. (NOT AMENDED) The system as recited in Claim 29, wherein one or more  
2                   attachment or bend angles defined by the updated integrated circuit layout data  
3                   are multiples of other than ninety degrees.

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